

Miombo Woodlands : an endangered forest ecosystem in periurban areas of the southeastern cities of Democratic Republic of Congo

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Context :

In Democratic Republic of Congo (DRC), deforestation affects periurban areas. In the periurban area of Lubumbashi, forests occupying 85% of the territory in 1956 were reduced to less than 12% in 2009. In this context of deforestation / forests degradation, characterization of the last forests on the outskirts of the city is the **first step in ecological restoration**.

Objective : Characterization of Miombo Woodlands ecosystem in rural area around Lubumbashi

Method :

Study sites

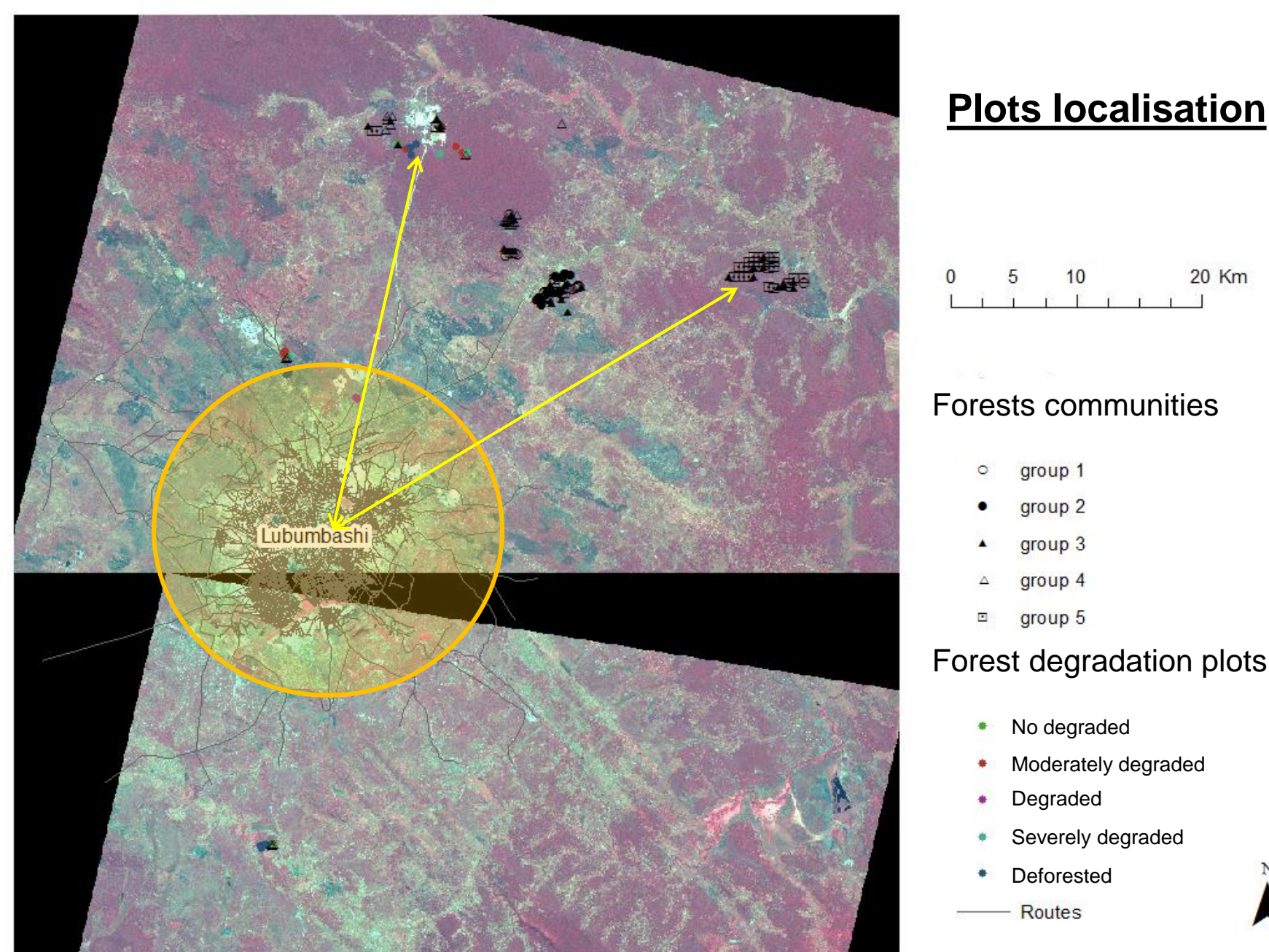
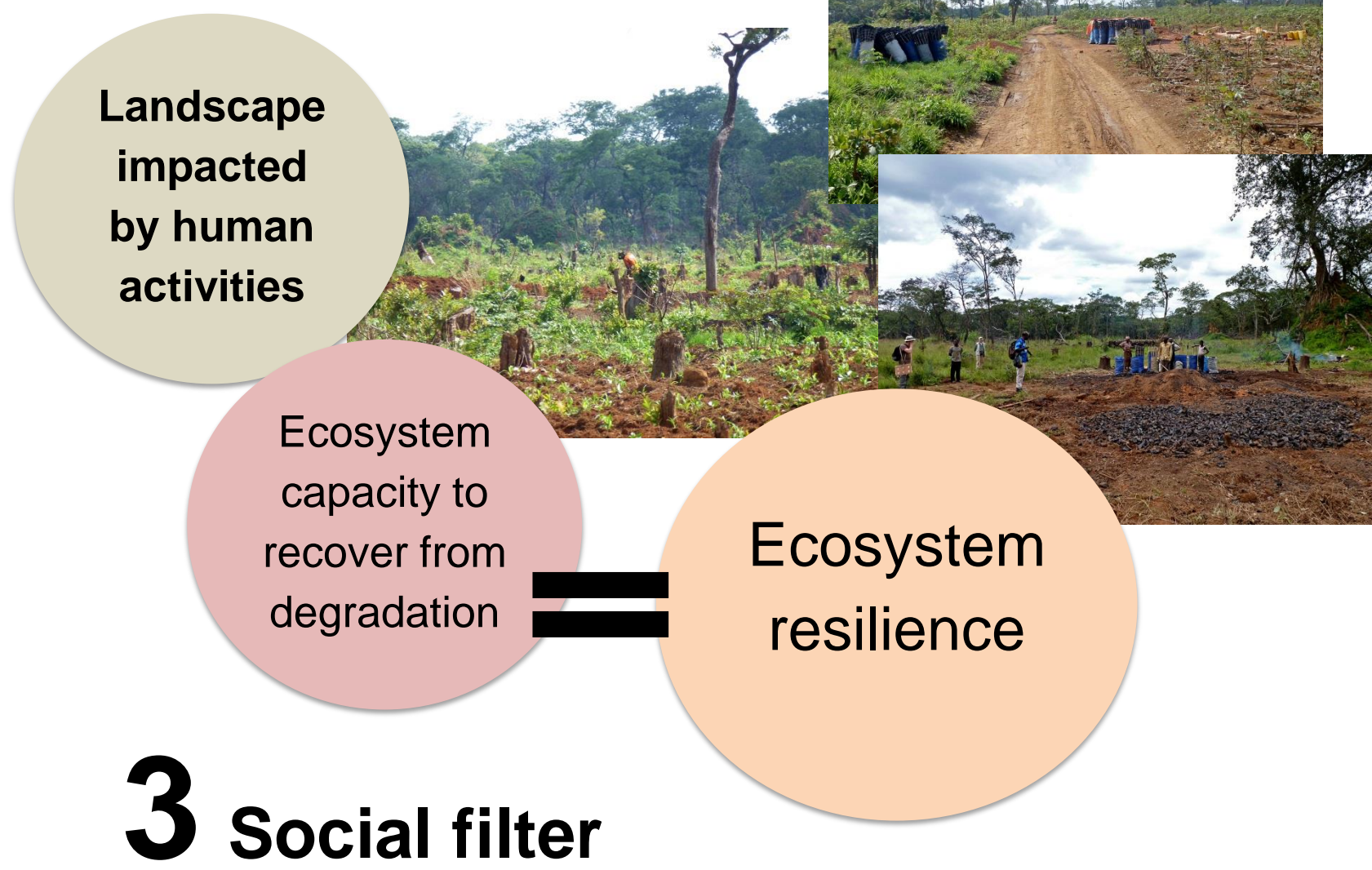


Fig 2 : Map of plots localisation

Scientific strategy

1 Reference ecosystem

2 Resilience/resistance



Data collect

- 1 Soil profile description
- 2 Composite sample of soil for chemical analysis (C, N, pH, K, Ca, Na, Mg, Mn).
- 1&2 Identification and counting of adult trees (diameter > 5 cm DBH)
- 3 Interviews in villages and exploration in fields

Results

1 – Five forests communities around Lubumbashi and relationship with soil parameters

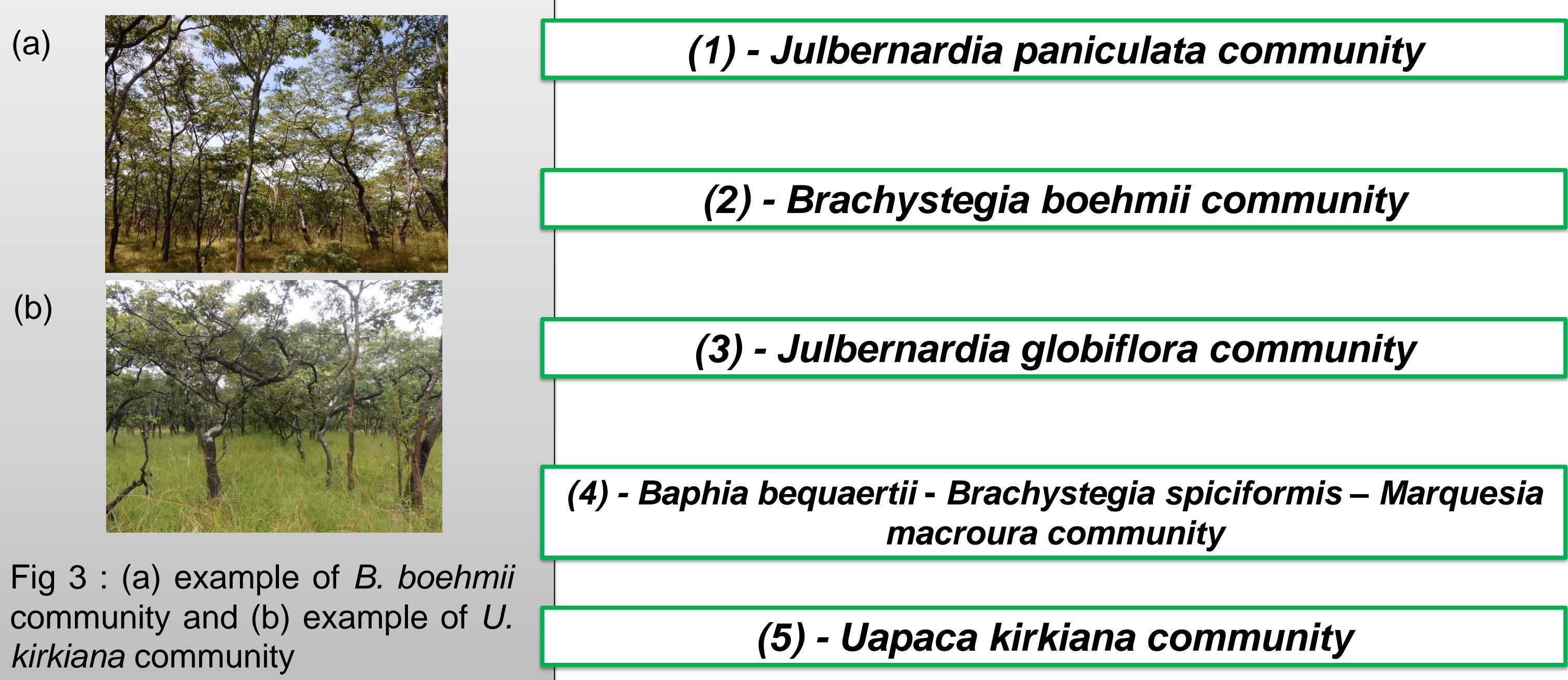


Fig 3 : (a) example of *B. boehmii* community and (b) example of *U. kirkiana* community

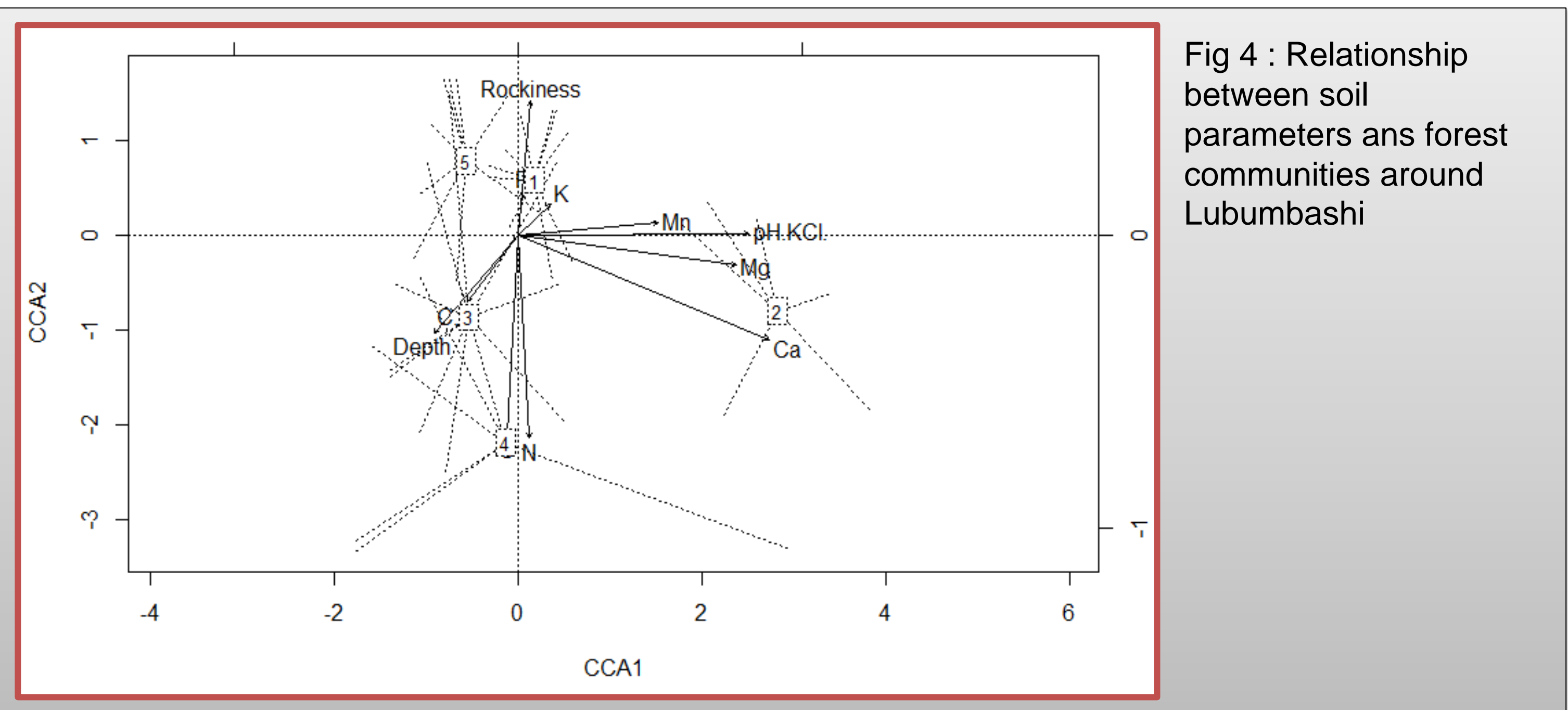


Fig 4 : Relationship between soil parameters and forest communities around Lubumbashi

2 – Resilience / Resistance of Miombo Woodlands for (4) *Baphia bequaertii* - *Brachystegia spiciformis* – *Marquesia macroura* community

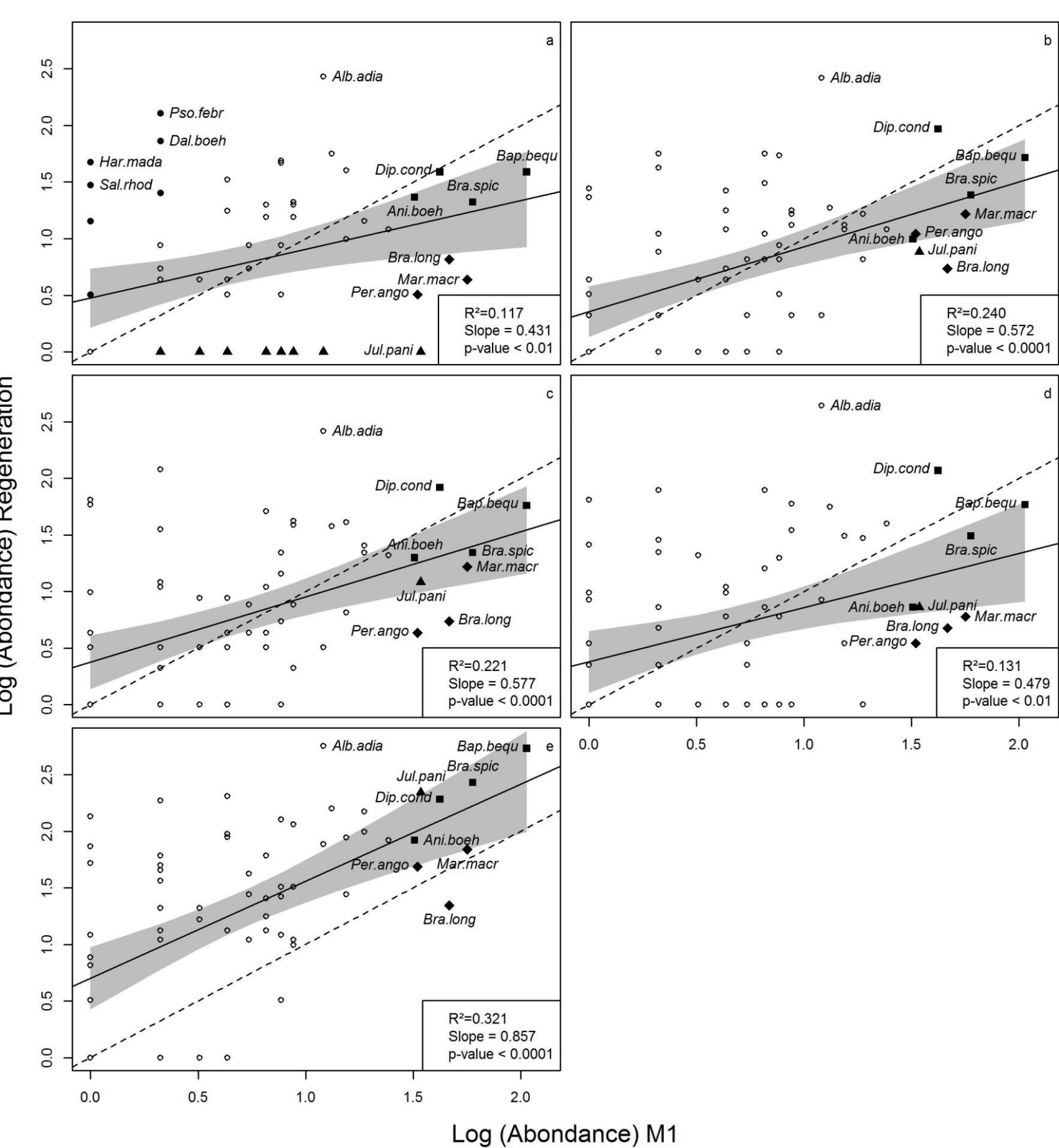


Fig 5 : Relationship between the average abundance of species per hectare in regeneration for each degree of forest degradation (a : no degraded forest, b : moderately degraded forest, c : degraded forest, d : severely degraded forest, e : deforested) and the average abundance of species per hectare in mature trees in no degraded forest (M1)

- Miombo ecosystem is resilient.
- The most abundant species of mature trees (M1) in no degraded forest (Fig 5a) are present in the regeneration for each degree of forest degradation.
- The most abundant species of mature trees in no degraded forest are :

Baphia bequaertii,
Brachystegia spiciformis,
Marquesia macroura,
Brachystegia longifolia,
Diplorrhynchus condylocarpon,
Julbernardia paniculata,
Anisophyllea boehmii,
Pericopsis angolensis.

3 – Social filter

- Few species cited by families.
- Only fruit species are known by more than 50% of the panel.
- Lose botanical knowledge → filter to the restoration of woodland.
- Species not maintained in the agricultural system.

Conclusion

- 5 forests communities around Lubumbashi.
- Potentiality of natural regeneration.
- Social filter.